Evaluation of Brainy Maths - An Early Years Programme Simultaneously Targeting Number and Executive Function Skills to Build Solid Foundations in Number

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Introduction

Brainy Maths was developed following careful examination of evidence from the field of educational neuroscience. The programme aims to build solid foundations in number for children in early years who are at risk of falling behind their peers. As well as targeting specific numerical skills, the activities in the Brainy Maths programme also incorporate use of executive functions (EF). This neurocognitive area includes: working memory - the active storing, manipulating and updating of information; inhibition – the suppression of automatic responses and distractions that are irrelevant to a task; and cognitive flexibility / shifting – the ability to adjust and switch between different rules in tasks (Miyake et al., 2000). These skills have been found to be as essential as core numerical knowledge when a child is developing their arithmetic skills (Menon & Uddin, 2010).

This report will first aim to summarise the research that led to the development of the programme. Initially the evidence highlighting the disproportionate association between both maths and EF with socioeconomic status will be considered, suggesting that focusing on these two areas could maximise the efficacy of an intervention targeting children from lower income families. Next, findings regarding the development of EF during the early years will be outlined, showing the importance of the early years in the development of these skills – in particular working memory and inhibition. Finally, research into the association between maths and EF will be presented, providing further evidence of the potential impact a dual focus intervention, concentrating on these two areas, could achieve.

The report will then provide an outline of the programme Brainy Maths and detail the two rounds of pilots that have been undertaken. Finally, a summary of the findings will be presented.

Numerical skills and socioeconomic background

Pupils from England's poorest communities are almost twice as likely to fail GCSE maths as their peers from the richest postcodes (Teach First, August, 2019) with two in five not passing. The disproportionately lower numerical skills of children from low socio-economic backgrounds starts from a very young age (Geary, 2007) and these gaps in knowledge accumulate, causing the disparity in achievement to widen over time (NCES, 2011). It is well established that numeracy skills are strongly predictive of later achievement, in maths as well as in other academic areas, (Duncan et al., 2007; Jordan, Kaplan, Ramineni, & Locuniak, 2009). Success in maths has been shown to relate to socio-economic outcomes in adulthood (Ansari, 2017) with low

level maths skills identified as being a problem to society in areas such as economy, crime, unemployment and poor health (Schleicher, Education advisor at the OECD; Every Child a Chance Trust, 2009).

It is therefore critical that children build a strong foundation for their mathematical knowledge early on as, without this, children will not be able to sufficiently access future objectives and progress in the age appropriate manner (Ansari, 2017).

Executive functions and socioeconomic background

Research conducted in the field of Educational Neuroscience has highlighted socioeconomic background as a predictor in performance across different neurocognitive areas, particularly in the area of EF (Noble, Farah, & McCandliss, 2006; Noble, Norman, & Farah, 2005).

Socioeconomic differences have been found in the cortical structure of the prefrontal cortex (PFC) – the brain region associated with EF, (Kishiyama, Boyce, Jimenez, Perry, & Knight, 2009; Noble, Houston, Kan, & Sowell, 2012). Associations have been highlighted between social disparity and reduced PFC function during childhood along with children from lower socioeconomic backgrounds preferentially recruiting brain regions that are inversely related to accuracy in applying new rules (Sheridan, Sarsour, Jutte, D'esposito & Boyce, 2012).

EF have a relatively long period of postnatal development, beginning during the first year of life and continuing throughout adolescence into early adulthood. It has been suggested that due to this longer developmental time frame, this particular neuro-cognitive system is susceptible to environmental factors for longer which could account for the large performance gaps across differing levels of socioeconomic background (Lawson, Hook, Hackman, & Farah, 2015). This long period of development, along with the large body of evidence regarding brain plasticity- the ability of the brain to change continuously throughout an individual's life - makes EF a key area to target when seeking to impact on the social disparity of achievement.

There are many risk factors that could mediate the relationship between socioeconomic background and EF, arising from differences in family, neighbourhood and societal experiences and the challenge in isolating these is a long and complicated one. However, the research available enables us to identify and target key candidate mechanisms when designing an intervention to tackle the executive function disparity in children from different socioeconomic backgrounds. Whilst factors found to pose a risk to executive function development such as early

gestational age (Aarnoudse-Moens, Weisglas-Kuperus, van Goudoever, & Oosterlaan, 2009; Hackman et al., 2010) and maternal depression (Beck, 2001; Grace, Evindar, & Stewart, 2003) would be difficult to target in a school based intervention, factors such as educational resources at home and the time parents spend with children (Clark et al, 2013), could have the potential for effective targeting in an intervention.

The development of EF during the early years

Findings from studies examining the early development of EF have found that major changes occur in these structures between the ages of 4 and 6 years – moving from a single component structure to two components of working memory and inhibition (Monette et al., 2015).

Longitudinal studies that measure EF at preschool and different academic skills after children have attended school for some time (Blair & Razza, 2007b; McClelland et al., 2007; Monette, Bigras, & Guay, 2011) have concluded that EF facilitate the development of academic skills. Early EF skills were found not only to contribute to the development of emergent literacy and numeracy skills but also to have a predictive relationship with later academic competencies (Welsh, Nix, Blair, Bierman, & Nelson, 2010).

By targeting these skills early on, it could be hoped to help children who are at risk of falling behind their peers to build strong foundations for the acquisition of skills both in the early years and beyond.

The association between executive function skills and Maths

A developmental link has been found to exist between early EF and maths skills (Agostino, Johnson, & Pascual-Leone, 2010; Mazzocco & Kover, 2007; Van Der Ven, Kroesbergen, Boom, & Leseman, 2012) with higher levels of EF skills in early years being related to faster growth of maths skills in primary school (Lee & Bull, 2016) and early delays in EF being associated with below average maths scores later on in schooling (Clark et al., 2010). This strong association between early EF and early maths have led to suggestions of a "unique relationship" between the two areas as both are undergoing an important period of development (Clark et al., 2013).

A longitudinal study identified EF at preschool as mediating the association between socioeconomic background and academic performance after the first year of school (Nesbitt, Baker-Ward, & Willoughby, 2013). This association was particularly strong in emergent maths skills. The authors therefore concluded that targeting EF as early

as possible could provide a promising intervention in mitigating the influence of social disadvantage on school performance, especially regarding emergent maths skills.

Of the multicomponents that comprise EF, it is primarily working memory (Bull, Espy, & Wiebe, 2008; Passolunghi & Lanfranchi, 2012; Miller et al., 2013) and inhibition (Blair & Razza, 2007; Clark et al., 2010) that have been found to be associated with emerging maths skills. Working memory is suggested as having the capacity to disrupt the acquisition of early maths skills and the cumulative effect of poor working memory during development could result in increasingly poor outcomes in maths (Alloway, Gathercole, Kirkwood, & Elliott, 2009). Difficulties in inhibiting irrelevant associations from entering the working memory could lead to increased reaction times and greater errors in the retrieval of arithmetic facts (Barrouillet, Fayol, & Lathuliere, 1997) with an inability to control and ignore irrelevant information leading to more intrusion errors while processing numerical information (Passolunghi & Siegel, 2001).

Research exploring the association between maths and EF therefore clearly indicates a strong relation between the two and suggests an intervention targeting both simultaneously, particularly incorporating the EF components of working memory and inhibition, could help develop maths skills and close the socioeconomic gap of achievement in this area.

Outline of the programme

Brainy Maths is a ten week programme that is currently aimed at children in reception who are at risk of not achieving their early learning goals in maths.

The programme is made up of games and practical activities that address number skills whilst simultaneously targeting and challenging the memory, inhibition and attention skills of the children. The activities are planned in such a way as to be adaptable to the individual needs of the children, ensuring an optimal level of challenge at all times. All of these are detailed in a staff handbook provided to participating schools. Children work in small groups with an adult for short sessions three times a week.

The parents of the children are invited to attend workshops where they learn to play a selection of the games their children have been playing, so that they can carry out these activities at home. The parents are given a resource pack consisting of the equipment and instruction sheets that they will need in order to do this. The programme uses very simple resources and so is relatively inexpensive to run.

Pilot 1

The initial pilot took part in a large primary school in Edmonton, North London. Twelve children were selected by the class teachers to take part (four from each class) based on income of their family and their performance in maths. The sessions were led by the nursery nurses working in each class.

Impact measurement

Prior to the start of the programme, children's number skills were assessed using the Sandwell assessment materials. This provided each child with a number age. The assessment was then repeated once the programme was completed and a new number age was generated.

Teachers completed a rating form for each child both at the start of the programme and after the programme had concluded, in order to assess changes in the children's confidence and engagement in maths.

Parent questionnaires were completed pre and post intervention to assess: level of parental engagement with number activities with their children; parent confidence in supporting children with number; parent perceptions of confidence of their child in maths; parent perceptions of various aspects of executive functioning of their child;

Post-intervention evaluation forms of the programme were given to parents and teachers to complete in order to assess the perceived impact of the programme. In addition, parent, teacher and nursery nurse interviews were conducted in order to explore how aspects of the programme were perceived to have worked or not from different perspectives.

Summary of findings from pilot 1

- All children made progress in their number skills with an average gain in number age of 11.3 months. (See appendices for full results from the Sandwell assessment for each child)
- Increased concentration and confidence of the children during class maths sessions was reported by their teachers and staff who worked with them
- Children displayed improved memory skills
- There was increased parental engagement with children's learning of maths at home
- Parents felt more confident in knowing how to work with their children on number at home

Testimonials from Pilot 1

"Playing games has made their memory better" (Reception teacher)

"The programme has given them better maths knowledge and language… it's also impacted on their PSED" (Reception teacher)

"When F started he was really low at maths. Now he does things and he shocks me with what he can do…he gets it straight away." (Nursery nurse)

"I learnt things I never knew before. I know the answer to things like 3 + 3 but not how to teach it. I didn't know for my other children so I couldn't help them." (Parent)

"I have seen better memory, better maths. He enjoys maths now." (Parent)

"He is better at listening and concentrating. He is more confident with number and it has also helped his reading and speaking English." (Parent)

"There were lots of changes. Progress in S was visible straight away. I'm so grateful for what this intervention programme has done for her." (Parent)

Pilot 2

The second round of pilots took part in 4 primary schools in North London. Each school carried out the programme with different numbers of children and in slightly different formats:

School 1: 10 children took part in two groups of 5 led by a teacher employed by the school to run interventions for children on free school meals. The same adult ran weekly parent workshops, for which there was a good turnout.

School 2: 13 children across three classes took part in groups of 3 – 5. The groups were run by either class teachers or support staff in the class. The phase leader ran one parent workshop at the end of the programme as it was not felt that weekly workshops would be well attended.

School 3: 12 children across three classes took part in groups of 4. The groups were run by the nursery nurses assigned to each class. One of the class teachers ran the weekly parent workshops, however these were not well attended.

School 4: 6 children across three classes took part in one group. The group was led by a member of support staff from a different year group. Only two parent

workshops were run and these were attended by only two parents. The workshops were run by a member of staff from a different year group.

Impact measurement

- Prior to the start of the programme, children's number skills were assessed using the Sandwell assessment materials. This provided each child with a number age. The assessment was then repeated once the programme was completed and a new number age was generated. This data was used in various ways: the children's number ages pre and post intervention were compared to generate a number age gain in months; the number of children who had a number age below their chronological age at the start of the programme was compared to the number of children who had a number age below their chronological age at the end of the programme; for children who had number ages below their chronological age at the end of the programme, the gap between their chronological and number age was calculated and compared between pre and post programme results.
- Teachers completed a rating form for each child both at the start of the programme and after the programme had completed, in order to assess changes in the children's attitude to maths and also their focus and attention skills in different situations. Ratings were given to each child on a sliding scale of 1 (poor) to 10 (strong) on the following areas: engagement during maths lessons; confidence in maths; focus and attention during carpet sessions; focus and attention during group activities; focus and attention during 1:1 activities with an adult. The ratings were used to generate pre and post intervention scores for each child for: 1) attitude to maths and 2) focus and attention skills. These were then compared to see whether there had been an improvement in these areas.
- Post-intervention evaluation forms of the programme were given to parents and teachers to complete in order to assess the perceived impact of the programme. In addition, interviews were conducted with the lead adult from each school in order to explore how aspects of the programme were perceived to have worked or not.

Summary of findings from pilot 2

School 1:

- The average number age gain was 12 months (See appendices for full results from the Sandwell assessment for each child)

- 10/10 children had number ages below their chronological ages at the start of the programme and by the end only 3/10 were still below their chronological age
- The three children who had a number age below their chronological age by the end of the programme had still made good progress: Child V made 8 months progress in number age and decreased the gap between chronological age and number age from -13 months to -8 months; Child L made 11 months progress and decreased the gap from -15 months to -7 months; Child A made 5 months progress and decreased the gap from -6 to -5 months
- The average combined maths attitude score pre programme was 2.7 / 10. At the end of the programme, the average score had increased to 5.9 / 10
- The average combined focus and attention score pre programme was 1.9 / 10 At the end of the programme, the average score had increased to 6.7 / 10

School 2

- The average number age gain was 12 months (See appendices for full results from the Sandwell assessment for each child)
- 12/13 children had number ages below their chronological ages at the start of the programme and by the end only 3/13 were still below their chronological age
- The three children who had a number age below their chronological age by the end of the programme had still made good progress: Child Ma made 7 months progress in number age and decreased the gap between chronological age and number age from -7 months to -5 months; Child Ay made 9 months progress and decreased the gap from -7 months to -3 months; Child Mi made 9 months progress and decreased the gap from -10 to -6 months
- The average combined maths attitude score pre programme was 3.8 / 10. At the end of the programme, the average score had increased to 6.8 / 10
- The average combined focus and attention score pre programme was 4.8 / 10 At the end of the programme, the average score had increased to 7.1 / 10

School 3

- The average number age gain was 14 months (See appendices for full results from the Sandwell assessment for each child)

- 12/12 children had number ages below their chronological ages at the start of the programme. By the end of the programme, 6/12 were still below their chronological age
- The six children who had a number age below their chronological age by the end of the programme had still made good progress: Child No made 13 months progress in number age and decreased the gap between chronological age and number age from -15 months to -7 months; Child Mah made 11 months progress and decreased the gap between chronological age and number age from -10 to -4 months; Child Jay made 14 months progress and decreased the gap between chronological and number age from -13 months to -4 months; Child S made 10 months progress and decreased the gap between chronological and number age from -12 to -7 months; Child R made 8 months progress and decreased the gap from -10 months to -7 months; Child C made 13 months progress and decreased the gap from -14 to -6 months.
- The average combined maths attitude score pre programme was 3.9 / 10. At the end of the programme, the average score had increased to 6.7 / 10
- The average combined focus and attention score pre programme was 4.7 / 10 At the end of the programme, the average score had increased to 7.2 / 10

School 4

- The average number age gain was 5 months (See appendices for full results from the Sandwell assessment for each child)
- 2/6 children had number ages below their chronological ages at the start of the programme. By the end of the programme, 3/6 were below their chronological age
- Considering the number of months between first and second assessment, the children who had number ages below their chronological ages at the end of the programme did not make good progress.
- Child S was the only child who had made good progress following the programme – starting with a number age that was one month above chronological age and finishing 8 months above chronological age
- The average combined maths attitude score pre programme was 3.4 / 10. At the end of the programme, the average score had increased to 6.4 / 10
- The average combined focus and attention score pre programme was 4.3 / 10 At the end of the programme, the average score had increased to 7.3 / 10

Testimonials from Pilot 2

Thank you so much for allowing us to be part of the programme. It is such a fantastic programme and was exactly what we needed. All the children really enjoyed taking part and even asked for sessions after it finished. The element of including the parents is brilliant, ensuring the maximum impact. The change in the children was noticeable and their belief in their abilities and engagement was transformed. (Head of Early Years)

The Brainy Maths programme has been hugely successful this year. All children involved have made good progress with their focus and understanding in Maths as well as with their engagement with learning in other areas across the curriculum. We look forward to continuing the programme next year. (Reception teacher)

Children enjoyed the sessions and it made a significant difference in their attitude to maths, improving self esteem, confidence and a greater willingness to take part in mathematical activities within class numeracy sessions. The games are fun and engaging designed in small and carefully sequenced steps. Questions and instructions are well thought out and provide plenty of opportunities for consolidation. Children are encouraged to think and speak about mathematics, leading to a greater use and development of mathematical language and an improved ability to problem solve. The memory games were extremely practical and something we have never used before, leading children to improve their listening and recall skills which helped with mathematical concepts. As each week progressed, parents were increasingly enthused, saying they had noticed improvements in their children's interest and ability in maths and parents expressed enjoyment in engaging in the activities with their child and appreciated the impact the programme was having in progressing their child's confidence and enthusiasm in maths. The programme builds foundations for long term improvements in mathematical attainment, helping to close the gap between children from different socio-economic backgrounds. (Early Years interventions teacher)

After doing this programme we found the children were more engaged with whole class number sessions and the parents talked about their excitement to use props such as playing cards and dominoes to explore number at home. The children were more confident using a number strip and the counting strip too. (Assistant Head)

Memory was a great tool to work with. There was a great increase in focus and concentration. (Support staff)

The programme made children more confident when tackling challenges during maths lessons. (Reception Lead)

Parents became more confident with helping their children at home. (Reception teacher)

Improvement was seen in all of the children who participated with children making progress and becoming more confident with numbers. (Reception support staff)

The activities were beneficial for the children's concentration skills and thinking for themselves. All the children's concentration and attention improved along with language, confidence and taking turns. (Reception support staff)

All children made progress with their number. I would be keen to run the programme again due to improved focus and concentration and also mathematical development. (Early Years phase leader)

It is a great resource! Children were always excited to go and other children in the class wanted to join in. (Reception support staff)

Ways Forward and Conclusions

The two rounds of pilots for Brainy Maths have provided invaluable data, highlighting the potential impact of the programme on children's maths skills at a crucial time in their learning. The data gathered also shows the impact the programme has on children's attitude towards maths together with on their memory and concentration skills in general.

When parents participated in the programme, evaluations were positive however the data from both rounds of pilots showed that parent participation was not crucial to children making progress in their maths skills although, in some cases, children did make increased progress with parental engagement. Parental commitment to the programme was an issue, particularly during pilot 2 and this is an area that needs to be considered in the future of this programme. The suggestion from one of the schools was to hold one extended parent workshop towards the end of the

programme, to share with parents what children had been doing in school and encourage them to continue these games with their children at home. Having to commit to such a session only once might increase participation of parents and hopefully seeing the benefit of the programme for their children , together with trying out the games and being given the resources, will enthuse them to continue with the activities at home.

For the programme to have maximum impact, the data from the second round of pilots suggests that it is preferable for a member of staff who is familiar with the children and who works in early years leads the sessions.

The data also suggests that the programme has greater impact on children who have a lower number age to start with, with a clear gap between their chronological and number age.

Future steps

- Meta cognition – reflect after each session on EF and number skills used, perhaps with children rating themselves. Adults leading session to continually encourage and praise paying attention, controlling actions, thinking before acting (in particular encouraging thinking time before answering), turn taking and listening to each other
- Memorisation strategies to be made explicit and modelled by adult leading the session in order to encourage children to develop their own memorising skills
- Staff folder to be organised according to sessions in order to make planning easier to access and follow
- Resources to be made available during free choice time in class so that children can access the games outside of the sessions
- Programme to be adapted and trialled in Nursery and Year 1

Sandwell Assessments: School 1, N15

Class A

Child	Age at test 1	Test 1 score	Number age test 1	Age at test 2	Test 2 score	Number age test 2	Number age gain
A	5yrs 3mths	19	4yrs 9mths	5yrs 7mths	25	5yrs 2mths	+5mths
E	4yrs 6mths	11	4yrs 2mths	4yrs 9mths	31	5yrs 7mths	+17mths
K	4yrs 5mths	13	4yrs 3mths	4yrs 8mths	34	5yrs 9mths	+18mths
L	5yrs 1mth	7	3yrs 10mths	5yrs 4mth	19	4yrs 9mths	+11mths
T *	4yrs 4mths	9	4yrs	4yrs 7mths	19	4yrs 9mths	+9mths

** Child T is non-verbal in school. Therefore it was difficult to assess her progress. However Child T's parents sent us short video clips of her engaged in Brainy maths activities at home, that provided some evidence of her abilities. Since Child T is only verbal at home with her parents, it was decided that her father should administer the tests under supervision in school in order to get a fair representation of Child T's abilities.*

Class B

Child	Age at test 1	Test 1 score	Number age test 1	Age at test 2	Test 2 score	Number age test 2	Number age gain
M	5yrs	19	4yrs 9mths	5yrs 4mths	32	5yrs 8mths	+11mths
N	4yrs 4mths	11	4yrs 2mths	4yrs 7mths	28	5yrs 4mths	+14mths
S	5yrs 2mths	22	4yrs 11mths	5yrs 6mths	37	6yrs	+13mths
T	4yrs 7mths	9	4yrs	4yrs 11mths	29	5yrs 5mths	+17mths

V	5yrs 3mths	11	4yrs 2mths	5yrs 6mths	21	4yrs 10mths	+8mths

Sandwell Assessments: School 2, E17

Name of child	Age at test 1	Test 1 score	Number age test 1	Age at test 2	Test 2 score	Number age test 2	Number age gain
Ma	5yrs 2mths	18	4yrs 7mths	5yrs 7mths	25	5yrs 2mths	+7mths
Ka	5yrs	20	4yrs 8mths	5yrs 5mths	30	5yrs 6mths	+10mths
Am	4yrs 8mths	16	4yrs 8mths	5yrs 1mth	24	5yrs 1mth	+5mths
Si	4yrs 8mths	9	3yrs 11mths	5yrs 1mth	24	5yrs 1mth	+14mths
Em	5yrs 3mths	12	4yrs 1mth	5yrs 8mths	34	5yrs 9mths	+20mths
En	4yrs 5mths	14	4yrs 3mths	4yrs 10mths	26	5yrs 3mths	+12mths
Aa	4yrs 9mths	15	4yrs 4mths	5yrs 2mths	27	5yrs 3mths	+11mths
Max	5yrs 4mths	15	4yrs 4mths	5yrs 9mths	39	6yrs 2mths	+22mths
Ay	5yrs 3mths	20	4yrs 8mths	5yrs 8mths	29	5yrs 5mths	+9mths
KhW	4yrs 8mths	17	4yrs 7mths	5yrs 1mth	30	5yrs 6mths	+11mths
Mi	5yrs 5mths	19	4yrs 7mths	5yrs 10mths	28	5yrs 4mths	+9mths
KhS	5 yrs	21	4yrs 9mths	5yrs 5mths	37	6yrs	+15mths
Mat	4yrs 6mths	16	4yrs 5mths	4yrs 11mths	31	5yrs 7mths	+14mths

Sandwell Assessments: School 3, N9

Class A

Child	Age test 1	Test 1 score	Number age at test 1	Age test 2	Test 2 score	Number age at test 2	Number age gain
Ni	4yrs 5mths	12	4yrs 1mth	4yrs 10mths	28	5yrs 4mths	+15 mths
Maha	4yrs 11mths	12	4yrs 1mth	5yrs 4mths	32	5yrs 7mths	+18mths
No	5yrs	7	3yrs 9mths	5yrs 5mths	22	4yrs 10mths	+13mths
Mah	5yrs	13	4yrs 2mths	5yrs 5mth	25	5yrs 1mth	+11mths

Class B

Child	Age test 1	Test 1 score	Number age at test 1	Age test 2	Test 2 score	Number age at test 2	Number age gain
Je	4yrs 11 mths	14	4yrs 3mths	5yrs 4mths	29	5yrs 5mths	+14mths
A	4yrs 9mths	13	4yrs 2mths	5yrs 2mths	27	5yrs 3mths	+13mths
Jan	4yrs 7mths	13	4yrs 2mths	5yrs	35	5yrs 10 mths	+20mths
Jay	5yrs	9	3 yrs 11mths	5yrs 5 mths	25	5 yrs 1 mth	+14mths

Class C

Child	Age test 1	Test 1 score	Number age at test 1	Age test 2	Test 2 score	Number age at test 2	Number age gain
S	5yrs	11	4yrs	5yrs 5mths	22	4yrs 10mths	+10mths
R	4yrs 4mths	4	3yrs 6mths	4yrs 9mths	13	4yrs 2mths	+8mths
Z	4yrs 4mths	8	3yrs 10mths	4yrs 9mths	28	5yrs 4mths	+18mths

C	**4yrs 10mths**	**6**	**3 yrs 8mths**	**5yrs 3 mths**	**19**	**4yrs 9mths**	**+13mths**

Sandwell Assessment: School 4, EN2

Child	Age at test 1	Test 1 score	Number age at test 1	Age at test 2	Test 2 score	Number age at test 2	Number age gain
A	4y 7m	25	5yrs 2mths	5yrs	29	5yrs 5mths	+5mths
K	4y 9m	25	5yrs 2mths	5yrs 2mths	28	5yrs 4mths	+2mths
W	4y 8m	10	4yrs 1mth	5yrs 1mth	14	4yrs 4mths	+3mths
F	4y 11m	22	4yrs 11mths	5yrs 4mths	23	5yrs	+1mth
E	5y 4m	22	4yrs 11mths	5yrs 9mths	29	5yrs 5mths	+6mths
S	4y 7m	18	4yrs 8mths	4yrs 11mths	31	5yrs 7mths	+11mths